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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,309	03/12/2004	Toshihiko Watanabe	112857-467	8209

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EXAMINER

LOUIE, WAI SING

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/799,309

Applicant(s)

WATANABE ET AL.

Examiner

Wai-Sing Louie

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 15-19, 26-34 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14, 20-25, 35 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/7/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The argument in the response to the non-final rejection is persuasive and the non-final rejection of previous office action is withdrawn. A new ground of rejection is as below.

Claim Objections

Claim 14 is objected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- In claim 14, line 5, “a contact layer, where a size of the contact layer is minute relative to the size of the light output surface” is claimed. However, “minute relative” is indefinite, which does not clearly describe the size of the layer.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 9, and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshitake et al. (US 6,900,473).

With regard to claims 1 and 9, Yoshitake et al. disclose a semiconductor light-emitting device, LED (col. 2, line 60 to col. 11, line 60 and fig. 1) comprising:

- A light-emitting device main body having a light output surface 13 and transferred (col. 3, lines 7-8);
- A transparent electrode 17 formed in a size larger than a size of the light output surface 13 so as to cover the light output surface 13 and connected directly to a whole area of the light output surface 13 (col. 3, lines 38-39 and fig. 1c).

With regard to claim 2, Yoshitake et al. disclose the transparent electrode 17 provides connection between a wiring for supplying electrical power to the pad electrode 23 of the light-emitting device main body (col. 3, lines 49-54 and fig. 1c).

With regard to claim 3, in addition to the limitations disclosed in claim 1 above, Yoshitake et al. also disclose:

- The light-emitting device main body is provided in the form of a chip that includes a plurality of semiconductor layers 11-16 (col. 3, lines 55-64 and fig. 1c).

With regard to claim 4, Yoshitake et al. disclose the transparent electrode 17 is connected to the light output surface 13 through a contact layer 16, where a size of the contact layer 16 is minute relative to the size of the light output surface 13 (col. 3, line 12 and fig. 1c).

With regard to claims 5 and 37, Yoshitake et al. disclose the refractive index of the transparent electrode 17 (col. 7, lines 24-33) is lower than the refractive index of the semiconductor layer 13 including the light output surface (col. 8, line 33 and fig. 12) and is higher than the refractive index of a resin (col. 1, lines 31-32) provided on the upper side of the transparent electrode 17 (col. 3, lines 55-64).

Claims 10-11, 14, 20-23, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Konuma (US 6,905,907).

With regard to claims 10, 14, and 35, Konuma discloses an image display device (col. 7, line 43 to col. 28, line 67 and fig. 8-9) comprising:

- an image display surface 913 formed by arranging a plurality of light-emitting devices 907 on an apparatus substrate 901 (fig. 9);
- A plurality of light-emitting device main body 907 (fig. 9a) having a light output surface 233 and transferred (fig. 2b)
- A transparent electrode 235 formed in a size larger than a size of the light output surface 233 so as to cover the output surface 233 and connected directly to whole area of the light output surface 233 (col. 9, lines 62-67 and fig. 2b) through a contact layer 318 (same as layer 234) is minute relative to the size of the light output surface 312 (fig. 3b).

With regard to claim 11, Konuma discloses the transparent electrode 911 is formed collectively on the light surfaces of the plurality of light-emitting device main bodies 907 (fig. 9a and 9b).

With regard to claims 20-21, Konuma discloses:

- A light-emitting device main body having a light output surface 233 (col. 9, lines 62-67 and fig. 2b);
- A contact metal 234 formed on the light output surface 233 (col. 9, lines 62-67 and fig. 2b);
- A wiring layer 906 (power supply to the pixels) formed outside the region of the light output surface 233 (col. 23, lines 29-37 and fig. 2b and 9);
- A transparent electrode 235 so formed as to cover the contact metal 234 and the wiring layer 906 (fig. 2b and 9).

With regard to claims 22-23, Konuma discloses the contact metal is gold, which is a noble metal (col. 9, line 67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshitake et al. (US 6,900,473) in view of Yashiki (US 5,454,716).

With regard to claim 6, Yoshitake et al. do not disclose coating the light output surface with a conductive paste containing conductive particles dispersed in a light transmitting resin forms the transparent electrode. However, Yashiki discloses forming a conductive layer by coating the substrate with a layer of heat-cured resin embedded with conductive material such as metal particles (Yashiki col. 6, lines 32-36). Yashiki teaches the heat-cured conductive resin layer is stable; improves adhesion property to the device; and improves the image quality (Yashiki col. 6, lines 40-56). Therefore, it would have been obvious to one of ordinary skill in the art to modify Yoshitake's device with the teaching of Yashiki to provide a coating on the light output surface with a conductive layer containing conductive particles dispersed in a light transmitting resin in order produce stable; improves adhesion property to the device; and improves the image quality.

With regard to claim 7, Yoshitake et al. modified by Yashiki disclose the conductive particles scatter light emitted from the light output surface and diffuse the light from the transparent electrode (conductive layer) to an exterior of the device (Yashiki col. 6, lines 57-60).

With regard to claim 8, Yoshitake et al. modified by Yashiki disclose the conductive particles include ITO (col. 6, line 35 and col. 19 and line 17).

Claims 12-13 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konuma (US 6,905,907) in view of Yashiki (US 5,454,716).

With regard to claim 12, Konuma does not disclose coating the light output surface with a conductive paste containing conductive particles dispersed in a light transmitting resin forms the transparent electrode. However, Yashiki discloses forming a conductive layer by coating the

substrate with a layer of heat-cured resin embedded with conductive material such as metal particles (Yashiki col. 6, lines 32-36). Yashiki teaches the heat-cured conductive resin layer is stable; improves adhesion property to the device; and improves the image quality (Yashiki col. 6, lines 40-56). Therefore, it would have been obvious to one of ordinary skill in the art to modify Konuma's device with the teaching of Yashiki to provide a coating on the light output surface with a conductive layer containing conductive particles dispersed in a light transmitting resin in order produce stable; improves adhesion property to the device; and improves the image quality.

With regard to claim 13, Konuma modified by Yashiki disclose the conductive particles scatter light emitted from the light output surface and diffuse the light from the transparent

With regard to claims 24-25, Konuma modified by Yashiki disclose the protective resin layer and a diffusion-preventing layer formed to cover the transparent electrode (conductive layer) to an exterior of the device (Yashiki col. 6, lines 40-56).

Response to Arguments

Applicant's arguments filed 10/17/05 have been fully considered but they are not persuasive.

- Applicant's arguments with respect to claims 3-8 and 20-25 have been considered but are moot in view of the new ground(s) of rejection.
- Applicant miss-quotes the thickness of the barrier layer 318 has a thickness of 20 μm (middle of page 13 in the response). However, the thickness of the barrier layer 318 is only 20 nm, which could transmit light through the barrier layer 318 (col. 13, lines 29-30).

- Applicant argues that Konuma does not disclose the contact layer 234 in fig. 2b or layer 318 in fig. 3b is minute relative to the size of the light output surface.

However, applicant does not clearly disclose the term “minute relative”. In the specification:

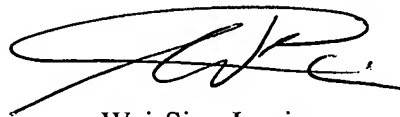
Even where the light-emitting device main bodies are minute in size, the transparent electrode formed to be larger in size than the light-emitting devices ensures that the transparent electrode can be easily connected to each of the light output surfaces, without accurately forming the transparent electrode relative to the positions of the individual light-emitting devices.

Therefore, Konuma’s light output surface 312 is minute in size and transparent electrode 319 is larger than the light output surface 312; which is relative to the positions of the individual light-emitting devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Wai-Sing Louie', with a stylized flourish at the end.

Wai-Sing Louie
Patent Examiner

Wsl
December 22, 2005.